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"Spectral Structure Near the 11.3 Micron Emission Feature"

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If the 11.3 μm emission feature seen in the spectra of many planetary nebulae, HII regions, and reflection nebulae is attributable to polycyclic aromatic hydrocarbons (PAHs), then additional features should be present between 11.3 and 13.0 μm . Moderate resolution ($\lambda/\Delta\lambda = 140$) spectra of NGC 7027, HD 44179, BD+30°3639, and IRAS 21282+5050 are presented which show evidence for new emission features centered near 12.0 and 12.7 μm . These are consistent with an origin from PAHs and can be used to constrain the molecular structure of the family of PAHs responsible for the infrared features. There is an indication that coronene-like PAHs contribute far more to the emission from NGC 7027 than to the emission from HD 44179. The observed asymmetric profile of the 11.3 μm band in all the spectra is consistent with the slight anharmonicity expected in the C-H out-of-plane bending mode in PAHs. A series of repeating features between 10 and 11 μm in the spectrum of HD 44179 suggests a simple hydride larger than 2 atoms is present in the gas phase in this object.